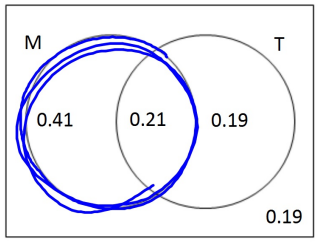
P(M) = 0.62

P(T) = 0.40

P(M ∩ T) = 0.21

∪ = add

∩ = overlap



b. P(M ∪ T) = 0.81

P(M) + P(T) − P(M ∩ T)

0.62 + 0.40 − 0.21

c. P(M^C) = 0.38

d. P(M^C ∩ T) = 0.19

e. P(M^C ∪ T) = 0.59

f. P(T^C ∩ M) = 0.41

g. P(T^C ∪ M^C) = 0.79

P(M ∩ T) = P(M) · P(T)

0.21 ≠ (0.62)(0.40)

NO

h. P(T|M) = P(T ∩ M) / P(M) = 0.21 / 0.62 = 0.339

i. Are M and T independent?

P(T|M) = P(T)

0.339 ≠ 0.40

NO

2. If P(A) = 0.51 and P(B) = 0.23 and P(A∩B) = 0.11, find the following:

a. P(A ∪ B) = P(A) + P(B) − P(A ∩ B)

0.51 + 0.23 − 0.11 = 0.63

b. P(B|A) = P(B ∩ A) / P(A) = 0.11 / 0.51 = 0.216

c. Are A and B disjoint events? Why or why not?

P(A ∩ B) ≠ 0

NO

d. Are A and B independent? Why or why not?

P(B|A) = P(B)

0.216 ≠ 0.23

NO

P(B ∩ A) = P(A) · P(B)

0.11 = (0.51)(0.23)

0.11 = 0.1173

√ Yes